Report No. 121

Report on a Semi-Detailed Soil Survey
of
PAYA LOGAN, PAYA BERKAJANG, PAYA SEBALI

4th Division

by
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HUNTING TECHNICAL SERVICES

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Semi-detailed Soil Survey
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Introduction

Originally this survey area was called Sungei Tiris but to avoid confusion, the area is named according to the Drainage and Irrigation Department as Paya Logan, Paya Berkajang and Paya Sebali.

The investigation of these payas was requested by the Fourth Division Development Committee with the aim of investigating the suitability of the area for a wet padi scheme. Wall in 1962 included these payas in his reconnaissance soil survey of Bekenu-Suai-Niah area (Survey Report No.35). The semi-detailed survey was carried out in April 1968 by the reporter assisted by two Agricultural Assistants, Basmawi bin Mahli and Zamiran bin Ujang.

The three payas with a total acreage of 1,600 acres are located approximately 3 miles down river from Bekenu Town (see location Map on Map 1). Paya Logan which is named after an old ox-bow lake formed by the old Sungei Tiris is situated on the northern part of the present Sungei Tiris. Paya Berkajang and Paya Sebali are situated on both sides of Sungei Sebali which is the main drain of the two payas. The poor drainage of Paya Berkajang contributed to the formation of vast peat accumulation in the area. An irrigation scheme was initiated by the Agriculture Department in the early '50's in these Payas. The record shows that the scheme was abandoned and remained defunct. In 1964 a pilot padi scheme of 50 acres under a joint co-operation of the Department of Agriculture and the Drainage & Irrigation Branch of Public Works Department was planned for Paya Logan. Once again the scheme met with failure due mainly to the following factors, "the unwillingness of the farmers to complete the planned work properly, the channels were not properly constructed, the farmers claimed there was insufficient water flow from the pump", and to make the matter worse "the flood came and the whole pump was submerged". The pump was taken out and was never re-installed. The whole project was abandoned.

There being no accurate scaled map of 1:10,000 available, the field map was compiled from a mosaic formed from enlarged aerial photographs (Sortie No. 12/67 Photo No. 0547-8, 0577-8). The degree of inaccuracy of this map is high and the acreage figures given on the soil map should be treated with reserve. Both the location of Sg. Tiris and Sg. Sebali are approximate.

Two maps are produced: Map 1 indicates the soil pattern and Map 2 the drainage potential.

Vegetation & Landuse

The vegetation on these three payas is mainly secondary growth of age not exceeding fifteen years old but the areas along Sungei Tiris and the upper part of Paya Sebali are under the annual padi cultivation.

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Population

The people in this area are of Kedayan descent of Muslim faith. They live in individual houses along Sg. Tiris. Their main income is derived from the annual padi cultivation, rubber gardens and a few from their pepper garden. A local council school up to Primary Four education was built for the children in the area. The only shopping centre is Bekenu Town where Tuesday and Friday are conventionally accepted as shopping days for people in Bekenu District though the shops open on any other day except Sunday. The only means of communication is by river.

Method of Survey

The semi-detailed soil survey is standard for Sarawak. Aerial photographs were first studied in the laboratory and where possible tentative soil boundaries were marked from the vegetation pattern and later transferred on to the field maps. The 1,000 to 1,500 feet apart rentises were cut in order to check or amend the soil boundaries.

Soils

Being a flat area and the soils being derived from the alluvial deposits, the soils comprise mainly of the gley soils as shown in the table below:

GREAT SOIL GROUP	SOIL FAMILY
Recent alluvial	Seduau
Gley soil	Bijat
	Sebandi
Peat Soil	Mukah
	Anderson

Seduau Family (65 acres)

The soil of this family is found in a few small areas along Sg. Sebali and Sg. Tiris as shown on Map 1.

Being an actively accumulating soil, Seduau soil has the following characteristics. The soil is brownish yellow to yellow clay loam on clay with some indication of the two grades of texture being repeated down the profile. Mottles of reddish brown to rusty brown are found at depth below 25 inches in a number of profiles, while in others they range from faint to totally absent.

The soil is suitable for annual and perennial crops.

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Bijat Family (145 acres)

Bijat soil is found mainly along Sg. Sebali and Sg. Tiris. This soil presently supports local fruit trees, a good indication that it is capable of supporting other crops.

The common characteristics of Bijat are the brownish grey clay loam top on a thick layer of grey and light grey clay. Many medium and distinct mottles occur in the profiles and then fade out at depth.

Bijat soil is ideal for padi cultivation.

Sebandi Family (550 acres)

This soil is found backing the Bijat soil along Sg. Tiris, backing the Seduau in Paya Berkajang and occurs extensively in the infilled valley of Paya Sebali. The bulk of the area under this soil is constantly used for the cultivation of padi.

Sebandi soil is characterised by the brownish grey clay loam to clay on light grey clay. The presence of 10 inches of peat top soil is its common feature. When the soil is submerged, mottles are practically absent, but when the water-table is lower in the profile, rusty brown mottles are seen in the layer above the water-table.

Drainage condition is very poor. This soil is ideal for padi with improved drainage.

Mukah Family (335 acres)

Mukah soil is found extensively in Paya Logan and Paya Berkajang and only a small patch in Paya Sebali. This soil occurs in the lower part of the alluvial flats where water tends to accumulate thus making a favourable condition for the formation of peat.

Mukah soil is in some way similar to Sebandi with the light grey clay covered by peat topsoil which in Mukah extends from 10 to 40 inches deep. Mottling is totally absent. The drainage is very poor.

This soil is good for padi only after it has been drained.

Anderson Family (535 acres)

Anderson soils are found in the centre of the alluvial flat where water tends to accumulate thus inducing the formation of peat soil as can be found in Paya Logan and the greater part of Paya Berkajang.

The characteristics of Anderson soil are the thick accumulation of undecomposed peat. It is very poorly drained. In areas where it was cleared for padi, the top layer may be well decomposed. This soil is further sub-divided into three phases:

Anderson 1	40 - 80" peat
Anderson 2	80 - 120" peat
Anderson 3	120" + peat.

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In the Paya Logan, Anderson 1 - 3 was noted and in Paya Berkajang Anderson 1 - 2. The occurence of Anderson 3 in the latter paya could not be ruled out.

In general Anderson soil is regarded as unsuitable for agriculture but with major drainage as recommended in the drainage requirement, peat up to 60 inches could be claimed for the cultivation of padi.

Conclusion

As seen from the soil map, approximately 1,000 acres of Bijat, Sebandi and Mukah soils after drainage could be used for the cultivation of padi and another 185 acres of shallow peat up to 60 inches could be included after extensive drainage. 535 acres of Anderson 1 to 3 is regarded as unsuitable. The 65 acres of Seduau soil which can support a wide variety of crops, could be included into the padi soil.

Map 2 shows the required drainage for the area for the cultivation of padi. For further detail on this requirement please refer to the Appendix of Soil Survey Report of Sungei Seah (Report No. 119).